WHAT IS CLAIMED IS:

1. A mark position detection apparatus which comprises:

an illumination optical system for illuminating a measurement mark with illumination light;

an imaging optical system for converging light reflected from said measurement mark to form an image of said measurement mark on an image pickup apparatus; and which measures a positional displacement of said measurement mark by processing an image signal obtained by said image pickup apparatus;

wherein an optical element for compensating a difference in asymmetry of said image signal that depends on the wavelength of said illumination light, is provided in said illumination optical system.

2. A mark position detection apparatus according to claim 1, wherein said optical element is provided in a parallel light flux portion of said illumination optical system.

3. A mark position detection apparatus which comprises:

an illumination optical system for illuminating a measurement mark with illumination light; and

an imaging optical system for converging light

reflected from said measurement mark to form an image of said measurement mark on an image pickup apparatus, and which measures a positional displacement of said measurement mark by processing an image signal obtained by said image pickup apparatus; and

wherein an optical element for compensating a difference in asymmetry of said image signal that depends on the wavelength of said illumination light, is provided in a parallel light flux portion of said imaging optical system.

4. A mark position detection apparatus according to any one of claims 1 to 3, wherein said optical element comprises a plane parallel plate.

5. A mark position detection apparatus according to any one of claims 1 to 3, wherein said optical element comprises a plane parallel plate provided with a tilting mechanism.

6. A mark position detection apparatus which comprises:

an illumination optical system for illuminating a measurement mark with illumination light; and

an imaging optical system for converging light reflected from said measurement mark to form an image of said measurement mark on an image pickup

apparatus; and which measures a positional displacement of said measurement mark by processing an image signal obtained by said image pickup apparatus;

wherein a first optical element is provided in said illumination optical system and a second optical element is provided in a parallel light flux portion of said imaging optical system, thereby compensating a difference in asymmetry of said image signal that depends on the wavelength of said illumination light.

7. A mark position detection apparatus according to claim 6, wherein each of said first optical element and said second optical element comprises a plane parallel plate.

8. A mark position detection apparatus according to claim 6 or 7, wherein each of said first optical element and said second optical element comprises a plane parallel plate provided with a tilting mechanism.

9. A mark position detection apparatus according to claim 6 or 7, wherein said first optical element or said second optical element comprises a plane parallel plate provided with a tilting mechanism.

10. A method for adjusting a microscope apparatus having an illumination optical system for illuminating a measurement mark with illumination light and an imaging optical system for converging light reflected from said measurement mark to form an image of said measurement mark on an image pickup apparatus, said microscope apparatus detecting a positional displacement of said measurement mark by processing an image signal obtained by said image pickup apparatus, the method comprising:

providing an optical element for shifting an light axis of said illumination light at a position in the vicinity of a position of an illumination aperture stop or a position conjugate with the position of the illumination aperture stop; and

adjusting said optical element in such a way that illumination wavelength dependency of said image signal becomes minimum.

11. A method for adjusting a microscope apparatus according to claim 10, wherein said measurement mark comprises linear indents having a regular width that are arranged periodically with regular intervals.

12. A method for adjusting a microscope apparatus according to claim 10, wherein said

measurement mark comprises at least two small rectangular indents having the common center, and the depths of said two rectangular indents are different from each other.

13. A method for adjusting a microscope apparatus according to any one of claims 10 to 12, wherein said measurement mark comprises an indented portion having a depth equal to two to six times the focal length of said microscope apparatus.